GPS calibration of DTAG equipment with respect to PTB G1 (1015-2017)

Summary

Over May-July 2017, the PTB conducted a trip to calibrate GPS equipment owned by DTAG. The trip started and finished at the PTB, providing closure with respect to PTB Group1 reference receiver PT02.

The operations and report of measurements are described in the report by PTB.

- **Final results for the calibrated equipment**

The INTDLY values given in Table 1 have been computed by PTB using INTDLY values of PT02 from the Group 1 trip 1001-2016. These INTDLY values should not be updated to reflect later changes in the conventional INTDLY values of PT02.

For a P3/PPP UTC link A-B involving any Group 1 and any receiver in this trip, the uncertainty resulting from the calibration, U_B(A-B), is computed as

$$U_B(A\text{-}B) = (U_{CAL0}^2 + \Delta U_{CAL}(A)^2 + \Delta U_{CAL}(B)^2)^{1/2} \quad (1)$$

where U_{CAL0} = 2.5 ns at the time of calibration, as given conventionally to Group 2, and where ΔU_{CAL} (generally zero) is specified for each system.

Calibration results in Table 1 correspond to the set-up during the measurements, from the date indicated as "Meas. Date". Changes in the set-up of the receivers after the calibration must be accounted for as described in section A.3.6 of the Calibration guidelines v3.2 in ftp://ftp2.bipm.org/pub/tai/publication/gnss-calibration/guidelines/.

Table 1. Final P1/P2 INTDLY values from the 1015-2017 trip. Values of REFDLY (with respect to the indicated REF) and CABDLY during the calibration and the resulting P3 Total delay TOTDLY are also indicated for reference (all values in ns). "Meas. Date" refers to the first day of the differential calibration, to which the calibration results can be applied.

System	BIPM	Meas. date	INTDLY P1	INTDLY P2	REF	REFDLY	CABDLY	Note	TOTDLY P3	ΔU_{CAL}
DT04	DT04	2017/06/20	**-35.6**	**-34.3**	UTC(DTAG)	25.3	506.1	(1)	443.2	0.0
DT05	DT05	2017/06/20	**-38.2**	**-36.1**	UTC(DTAG)	25.3	530.7	(2)	464.0	0.0

Notes:
(1) DT04 is a Mesit GTR51: The listed INTDLY are the full values. However the results of the calibration are changes (-2.1 ns P1, +3.7 ns P2) with respect to the values previously entered in the receiver.
(2) DT05 is a Mesit GTR51: The listed INTDLY are the full values. However the results of the calibration are changes (-3.9 ns P1, -1.6 ns P2) with respect to the values previously entered in the receiver.

Version history
V1.0 2017/08/31: Final results from Version 1.1 of the PTB Calibration report, to be implemented in G2 receivers: IMPLEMENTATION DATE = MJD 57996.